

Systems Approach to Innate Immunity, Inflammation, and Sepsis

Innate immunity is essential to survival in a pathogen-filled environment, since it is the body's first line of defense against disease. The innate immune system initiates the host's protective response against microbial invasion through the work of specialized cells that may directly engulf the pathogen, produce anti-microbial molecules to kill the pathogen, or orchestrate long-term immunity by recruiting and activating other specialized cells of the adaptive immune system. Adaptive immunity provides pathogen-specific protection, whereas innate immunity functions against any pathogenic microbe to provide more global protection. While the innate immune system is ancient and is found in plants, flies, and humans; our understanding of innate immunity is in its infancy. The National Institute of

Allergy and Infectious Diseases (NIAID) has recently awarded a five-year grant to researchers at The Scripps Research Institute (TSRI), the Institute for Systems Biology (ISB), and Rockefeller University to provide a comprehensive and detailed picture of innate immunity.

The primary objective of the program is to develop an encyclopedia of innate immune system activity. This large-scale collaborative project grant brings together investigators with many different scientific backgrounds and talents to use a "systems biology" approach to better understand how the innate immune system responds to bacteria and viruses, as well as its role in orchestrating adaptive immunity. Dr. Richard J. Ulevitch, of TSRI, is the Principal Investigator for the

project. A large portion of the funds is dedicated for the establishment of shared core facilities at TSRI and ISB. The information and reagents generated by this team will be available to the research community through a large database. The knowledge generated from this research could help scientists develop treatments for septic shock, certain autoimmune disorders, and diseases caused by potential agents of bioterrorism.

For more information about this program, including access to the database, please visit the website at www.septicshock.org. For more information about other NIAID biodefense research resources, please go to www.niaid.nih.gov/biodefense.

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